

**OBSERVATIONS ON THE ECLOSION OF THE HAIRY CICADA  
*TETTIGARCTA CRINITA* DISTANT (HOMOPTERA: CICADOIDEA:  
TETTIGARCTIDAE)**

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**Abstract**

The eclosion of *Tettigarcta crinita* Distant is documented and figured from observations made at Kosciusko National Park, NSW, Australia. Peculiarities of the eclosion are noted and compared with the eclosion of Cicadidae.

**Introduction**

The hairy cicada, *Tettigarcta crinita* Distant, is one of two extant species that make up the family Tettigarctidae. All other species of Tettigarctidae are known only from fossil records. The Tettigarctidae possess a number of morphological features that clearly distinguish them from all other cicadas (Evans 1941, Moulds 1990).

In this paper we document the eclosion of *T. crinita* and discuss differences from the eclosion of other cicadas (family Cicadidae, *sensu* Hayashi 1984, Moulds 1990). Although aspects of the eclosion of *T. crinita* have been previously recorded (Ashton 1924, McKeown 1951, Moulds 1990), details have been lacking, making comparison of the eclosion processes impossible.

Our observations were made on 15 February 1997, near Rules Point (ca 1300 m altitude) at the junction of the exit road from the Yarrangobilly Caves and the Snowy Mountains Highway, Kosciusko National Park, NSW. A male final instar nymph was found climbing on the trunk (ca 10 cm dbh) of a snow gum, *Eucalyptus pauciflora*, at about 1.5 m above the ground. The nymph was transferred to a low shrub for ease of observation.

**Observations**

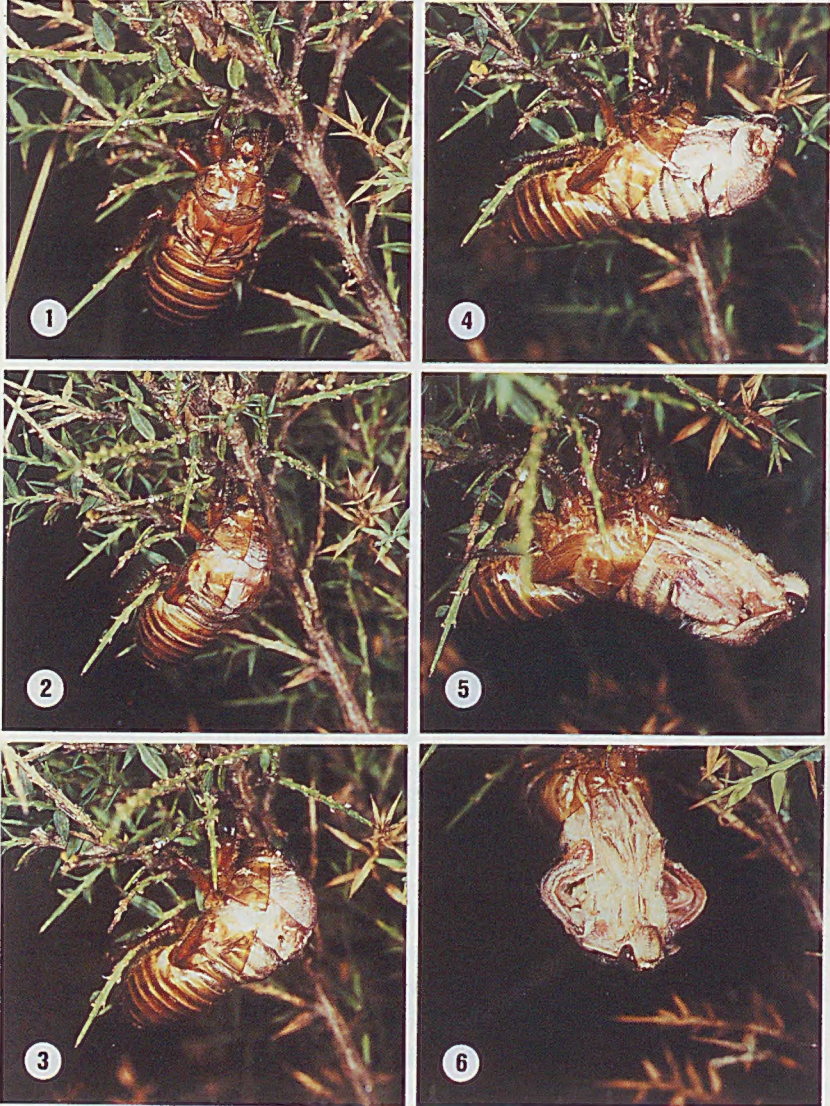
19:00h Eastern Standard Time (Fig. 1) – Just after dusk the nymph ceased moving after having placed its legs tightly around a twig in preparation for eclosion.

19:23h (Fig. 2) – After several attempts to hump the dorsum, the vertex and thoracic nota began to split along the dorsal mid-line.

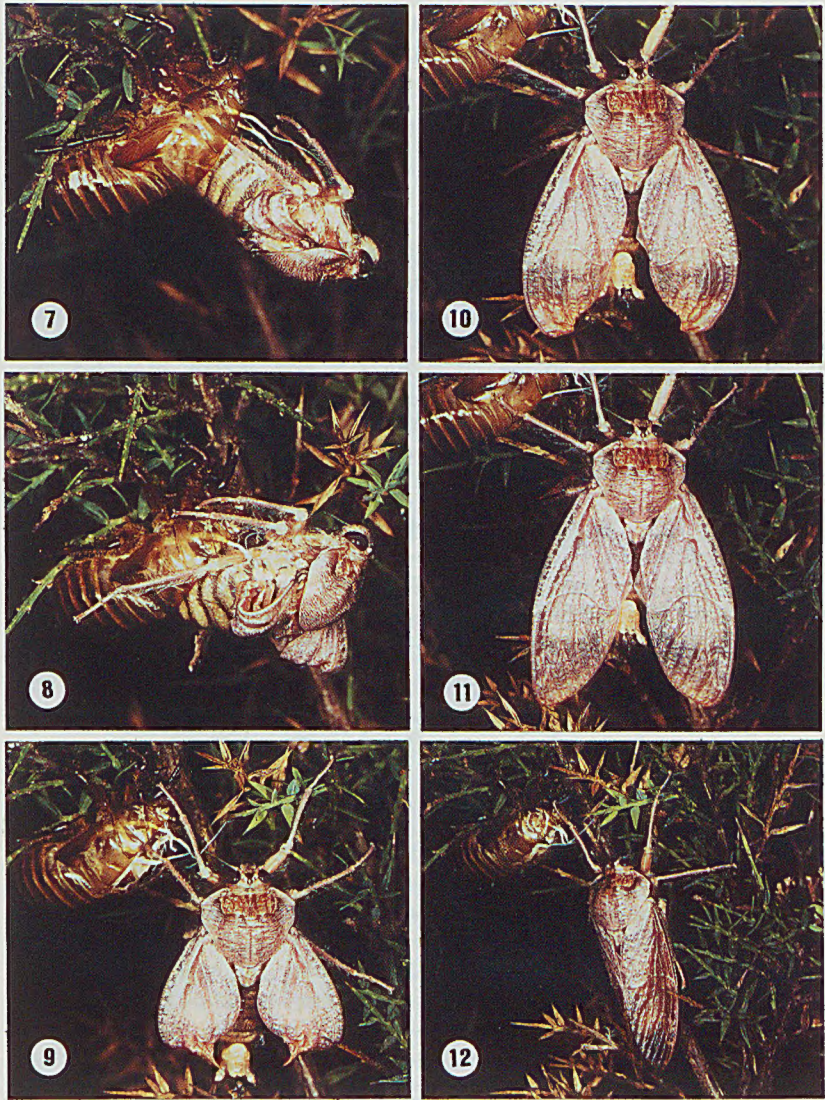
19:27h (Fig. 3) – Mesonotum, including scutellum, now largely exposed behind pronotum (to be covered later by the pronotum).

19:33h (Fig. 4) – Head freed. Body of the emerging adult is at this stage pale testaceous with the pronotal callus darkened.

19:42h (Fig. 5) – Fore and hind wings freed from exuviae, curling inside, and the forewing much wrinkled. Posterior plate of pronotum gradually expanded posteriad, now overlying much of mesonotum.



Figs 1-6. Eclosion of *Tettigarcta crinita* (at Yarrangobilly, Kosciusko Mts., NSW, on 15 February 1997; photos M. Hayashi).



Figs 7-12. Eclosion of *Tettigarcta crinita*, continued.

19:48h (Figs 6-7) – All legs have become free from the exuviae; wings now slightly lengthened. Mesonotum now largely concealed by the posterior dilation of pronotum, leaving only the scutellum visible; the typical *Tettigarcta* form of thoracic nota has now been completed. During this stage,

the body hangs backwards and downwards with the distal part of abdomen remaining within the exuviae. In this condition the adult remains immobile, a behaviour similar to that found in species throughout the Cicadidae.

20:10h (Fig. 8) – The body is now abruptly raised and the fore and mid legs grasp the head and pronotum of the exuviae. At this point, the teneral adult again rests without action for around 10 min. In contrast, emerging adults of Cicadidae take no rest at this stage.

20:18h (Figs 9-10) – The pilose abdomen is entirely pulled free of the exuviae and the adult clings by its fore and mid legs onto the exuviae or nearby twigs. A pair of genital styles (or harpagones) are now clearly visible, cudgel-like, densely pilose and protruding divergent. The basal half of forewing (proximal to the nodal line) is now mostly extended, thus forming a triangular shape. The distal part of forewing remains small and crumpled, as an orange-coloured knob-like process. Only after the entire extension of forewing basal to the nodal line, does the apical portion begin to extend.

20:28h (Fig. 11) – Wings have completely extended but continue to hang limp. The forewing is translucent and entirely pale testaceous while the hindwing is somewhat smoky. Forewing appears semi-glossy and heterogeneous (similar to the forewing of Heteroptera), coriaceous before nodal line and membranous beyond.

20:47h (Fig. 12) – Wings are folded tectiform above the dorsum. The emergence is now complete. Total time taken for emergence is approximately 1 hr 24 min from the splitting of the mid-dorsal line of the nymphal skin.

## Discussion

Although the species of Tettigarctidae show several morphological differences from Cicadidae, the manner and process of the eclosion as observed in *Tettigarcta crinita* are broadly similar. However, we recognise two notable differences. Firstly, the eclosion of *T. crinita* differs in the 10-minute pause prior to the complete release of the abdomen. This has not been observed in Cicadidae and may be characteristic of the Tettigarctidae. Secondly, unlike the Cicadidae in which the forewing, as a whole, is gradually extended from its base to the apex (Snodgrass 1921, Kato 1956, Moulds 1990, Boulard and Mondon 1995), that of *T. crinita* has two distinct steps in its forewing extension. There is complete expansion of the basal half, before expansion of the apical half. We have not observed such a development among other Auchenorrhyncha and it may be unique to the Tettigarctidae.

Further we note that the forewing of *T. crinita*, just after full extension, is clearly heterogeneous, divided by the nodal line, coriaceous basad and membranous apicad. Evans (1941) suggested that this hemelytral condition

and well-defined nodal line have evolved parallel to a similar condition in the Heteroptera.

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